

LISTING OF THE CLAIMS

As no claim amendments are submitted with this paper, the following listing of the claims is provided solely for the Examiner's convenience.

1. **(Canceled)**

2. **(Previously presented)** A functionalized isoapoptolidin compound comprising ~~a modified~~ an isoapoptolidin core or a stereoisomer thereof, in which:

(a) at least one hydroxyl group in the isoapoptolidin core is replaced with a substituent selected from C₁-C₂₄ hydrocarbyloxy, C₂-C₂₅ acyloxy, C₂-C₂₅ haloacyloxy, C₂-C₂₅ thioacyloxy, C₂-C₂₅ thiohaloacyloxy, C₂-C₂₅ carbonato, halogenated C₂-C₂₅ carbonato, C₂-C₂₅ thiocarbonato, halogenated C₂-C₂₅ thiocarbonato, carbamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted carbamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted carbamoyloxy, thiocarbamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted thiocarbamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted thiocarbamoyloxy, sulfamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted sulfamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted sulfamoyloxy, and protected hydroxyl groups;

(b) at least one 1,3-diene functionality in the isoapoptolidin core is replaced by the product of a Diels-Alder reaction with a dienophile;

(c) at least one carbon-carbon double bond in the isoapoptolidin core is replaced with a carbon-carbon single bond; and/or

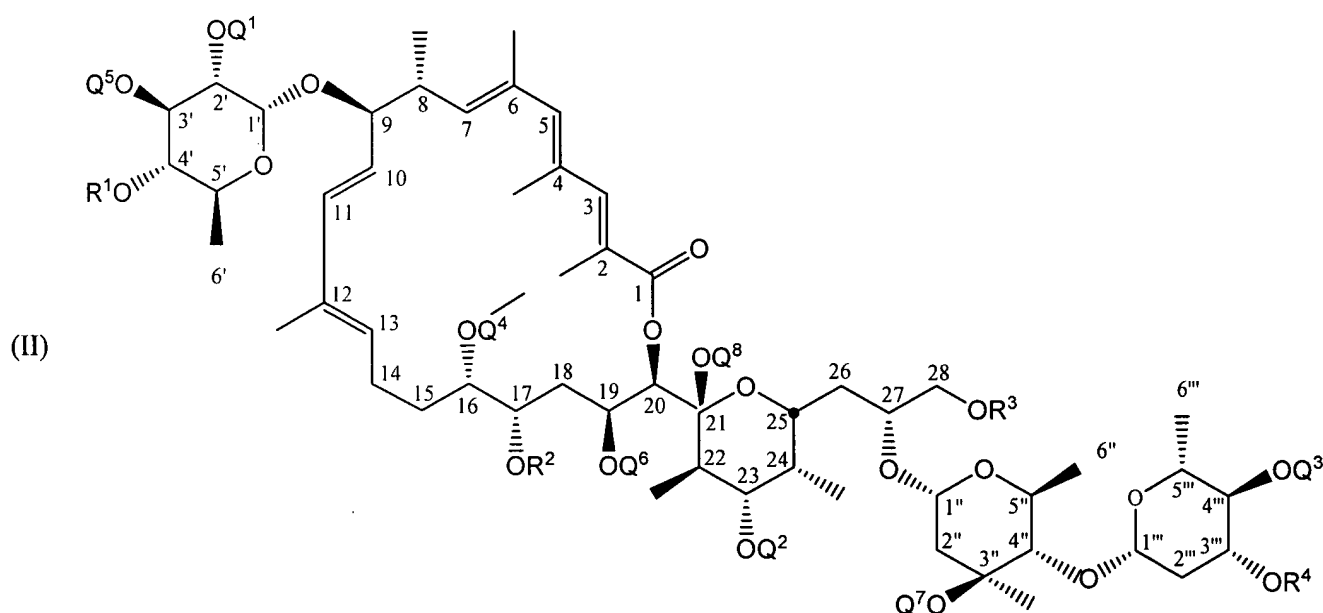
(d) at least one 1,2-diol functionality in the isoapoptolidin core is replaced with a cyclic ether.

3. **(Original)** The functionalized isoapoptolidin compound of claim 2, in which at least one hydroxyl group in the isoapoptolidin core is replaced with a substituent selected from C₁-C₂₄ hydrocarbyloxy, C₂-C₂₅ acyloxy, C₂-C₂₅ haloacyloxy, C₂-C₂₅ thioacyloxy, C₂-C₂₅ thiohaloacyloxy, C₂-C₂₅ carbonato, halogenated C₂-C₂₅ carbonato, C₂-C₂₅ thiocarbonato, halogenated C₂-C₂₅ thiocarbonato, carbamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted carbamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted carbamoyloxy, thiocarbamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted thiocarbamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted thiocarbamoyloxy, sulfamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted sulfamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted sulfamoyloxy, and protected hydroxyl groups.

4. **(Original)** The functionalized isoapoptolidin compound of claim 3, wherein the substituent is selected from C₁-C₁₂ hydrocarbyloxy, C₂-C₁₃ acyloxy, C₂-C₁₃ haloacyloxy, C₂-C₁₃ thioacyloxy, C₂-C₂₅ thiohaloacyloxy, C₂-C₁₃ carbonato, halogenated C₂-C₁₃ carbonato, C₂-C₁₃ thiocarbonato, halogenated C₂-C₁₃ thiocarbonato, carbamoyloxy, N-(C₁-C₁₂ hydrocarbyl)-substituted carbamoyloxy, N,N-di(C₁-C₁₂ hydrocarbyl)-substituted carbamoyloxy, thiocarbamoyloxy, N-(C₁-C₁₂ hydrocarbyl)-substituted thiocarbamoyloxy, N,N-di(C₁-C₁₂ hydrocarbyl)-substituted thiocarbamoyloxy, sulfamoyloxy, N-(C₁-C₁₂ hydrocarbyl)-substituted sulfamoyloxy, N,N-di(C₁-C₁₂ hydrocarbyl)-substituted sulfamoyloxy, (C₁-C₆ alkoxy)methyl ether, (C₁-C₆ alkylthio)methyl ether, and tri(C₁-C₁₂ hydrocarbyl)-substituted silyloxy.

5. **(Original)** The functionalized isoapoptolidin compound of claim 4, wherein the substituent is selected from C₁-C₁₂ hydrocarbyloxy, C₂-C₁₃ acyloxy, and tri(C₁-C₁₂ hydrocarbyl)-substituted silyloxy.

6. **(Original)** A compound having the structure of formula (II)



wherein:

Q¹, Q², Q³, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are independently selected from H, C₁-C₁₂ hydrocarbyl, acyl of the formula -(CO)-R⁵ in which R⁵ is C₁-C₁₂ hydrocarbyl, and hydroxyl-protecting groups; and R¹, R², R³, and R⁴ are C₁-C₁₂ alkyl or H, or a stereoisomer thereof.

7. **(Original)** The compound of claim 6, having the stereoisomeric configuration of formula (I).

8. **(Original)** The compound of claim 6, wherein:

$Q^1, Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are independently selected from H, C₁-C₆ hydrocarbyl, -(CO)-R⁵ wherein R⁵ is C₁-C₆ hydrocarbyl, and -Si(R⁶R⁷R⁸) wherein R⁶, R⁷, and R⁸ are C₁-C₆ hydrocarbyl; and R¹, R², R³, and R⁴ are C₁-C₄ alkyl.

9. **(Original)** The compound of claim 8, wherein:

$Q^1, Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are independently selected from H, C₁-C₆ alkyl, -(CO)-R⁵ wherein R⁵ is C₁-C₆ alkyl, and -Si(R⁶R⁷R⁸) wherein R⁶, R⁷, and R⁸ are all methyl or all ethyl; and R¹, R², R³, and R⁴ are methyl.

10. **(Original)** The compound of claim 7, wherein:

$Q^1, Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are independently selected from H, C₁-C₆ hydrocarbyl, -(CO)-R⁵ wherein R⁵ is C₁-C₆ hydrocarbyl, and -Si(R⁶R⁷R⁸) wherein R⁶, R⁷, and R⁸ are C₁-C₆ hydrocarbyl; and R¹, R², R³, and R⁴ are C₁-C₄ alkyl.

11. **(Original)** The compound of claim 10, wherein:

$Q^1, Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are independently selected from H, C₁-C₆ alkyl, -(CO)-R⁵ wherein R⁵ is C₁-C₆ alkyl, and -Si(R⁶R⁷R⁸) wherein R⁶, R⁷, and R⁸ are all methyl or all ethyl; and R¹, R², R³, and R⁴ are methyl.

12. **(Original)** The compound of claim 6, wherein:

Q^1 is -(CO)-R⁵ and $Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are H;
 Q^2 and Q^3 are -(CO)-R⁵ and Q^1, Q^4, Q^5, Q^6, Q^7 , and Q^8 are H;
 Q^3 is -(CO)-R⁵ and $Q^1, Q^2, Q^4, Q^5, Q^6, Q^7$, and Q^8 are H;
 Q^4 is -(CO)-R⁵ and $Q^1, Q^2, Q^3, Q^5, Q^6, Q^7$, and Q^8 are H;
 Q^5 is -(CO)-R⁵ and $Q^1, Q^2, Q^3, Q^4, Q^6, Q^7$, and Q^8 are H;
 Q^6 is -(CO)-R⁵ and $Q^1, Q^2, Q^3, Q^4, Q^5, Q^7$, and Q^8 are H;
 Q^6 is C₁-C₆ alkyl and $Q^1, Q^2, Q^3, Q^4, Q^5, Q^7$, and Q^8 are H; or
 Q^8 is C₁-C₆ alkyl and $Q^1, Q^2, Q^3, Q^4, Q^5, Q^6$, and Q^7 are H.

13. **(Original)** The compound of claim 12, wherein:

Q¹ is benzoyl and Q², Q³, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q² and Q³ are acetyl and Q¹, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q³ is acetyl and Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁴ is acetyl and Q¹, Q², Q³, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁵ is acetyl and Q¹, Q², Q³, Q⁴, Q⁶, Q⁷, and Q⁸ are H;
Q⁶ is acetyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H;
Q⁶ is methyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H; or
Q⁸ is methyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁶, and Q⁷ are H.

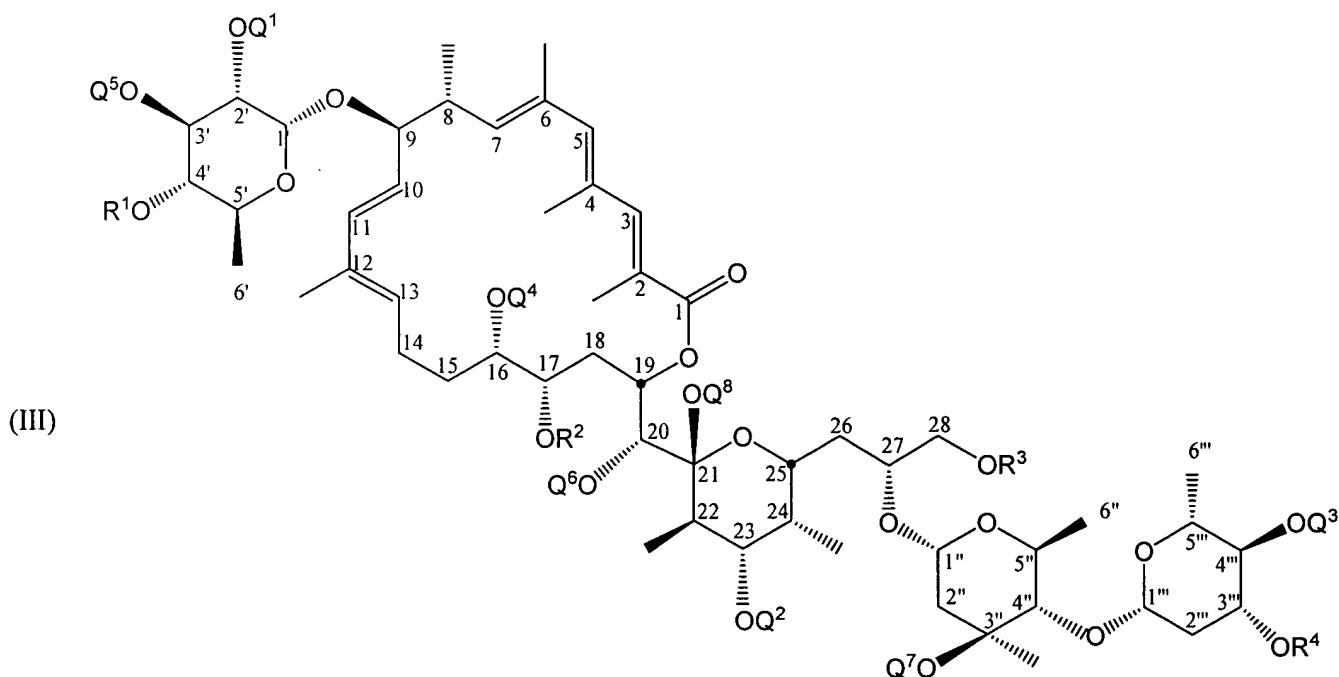
14. **(Original)** The compound of claim 7, wherein:

Q¹ is -(CO)-R⁵ and Q², Q³, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q² and Q³ are -(CO)-R⁵ and Q¹, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q³ is -(CO)-R⁵ and Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁴ is -(CO)-R⁵ and Q¹, Q², Q³, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁵ is -(CO)-R⁵ and Q¹, Q², Q³, Q⁴, Q⁶, Q⁷, and Q⁸ are H;
Q⁶ is -(CO)-R⁵ and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H;
Q⁶ is C₁-C₆ alkyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H; or
Q⁸ is C₁-C₆ alkyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁶, and Q⁷ are H.

15. **(Original)** The compound of claim 14, wherein:

Q¹ is benzoyl and Q², Q³, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q² and Q³ are acetyl and Q¹, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q³ is acetyl and Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁴ is acetyl and Q¹, Q², Q³, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁵ is acetyl and Q¹, Q², Q³, Q⁴, Q⁶, Q⁷, and Q⁸ are H;
Q⁶ is acetyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H;
Q⁶ is methyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H; or
Q⁸ is methyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁶, and Q⁷ are H.

16. **(Previously presented)** A compound having the structure of formula (III)



wherein:

Q^1 , Q^2 , Q^3 , Q^4 , Q^5 , Q^6 , Q^7 , and Q^8 are selected from H, C_1 - C_{12} hydrocarbyl, acyl of the formula -
 (CO)- R^5 in which R^5 is C_1 - C_{12} hydrocarbyl, and hydroxyl-protecting groups; and

R^1 , R^2 , R^3 , and R^4 are C_1 - C_{12} alkyl or H, with the proviso that at least one of Q^1 , Q^2 , Q^3 , Q^4 , Q^5 ,
 Q^6 , Q^7 , and Q^8 is other than H when R^1 , R^2 , R^3 , and R^4 are methyl and the compound has the
 stereoisomeric configuration of formula (III),
 or a stereoisomer thereof.

17. **(Original)** The compound of claim 16, having the stereoisomeric configuration of formula
 (III).

18. **(Original)** The compound of claim 16, wherein:

Q^1 , Q^2 , Q^3 , Q^4 , Q^5 , Q^6 , Q^7 , and Q^8 are selected from H, C_1 - C_6 hydrocarbyl, -(CO)- R^5 wherein R^5
 is C_1 - C_6 hydrocarbyl, and -Si(R^6 R^7 R^8) wherein R^6 , R^7 , and R^8 are C_1 - C_6 hydrocarbyl; and
 R^1 , R^2 , R^3 , and R^4 are C_1 - C_4 alkyl.

19. **(Original)** The compound of claim 18, wherein:

$Q^1, Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are selected from H, C_1-C_6 alkyl, $-(CO)-R^5$ wherein R^5 is C_1-C_6 alkyl, and $-Si(R^6R^7R^8)$ wherein R^6, R^7 , and R^8 are all methyl or all ethyl; and
 R^1, R^2, R^3 , and R^4 are methyl.

20. **(Original)** The compound of claim 17, wherein:

$Q^1, Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are selected from H, C_1-C_6 hydrocarbyl, $-(CO)-R^5$ wherein R^5 is C_1-C_6 hydrocarbyl, and $-Si(R^6R^7R^8)$ wherein R^6, R^7 , and R^8 are C_1-C_6 hydrocarbyl; and
 R^1, R^2, R^3 , and R^4 are C_1-C_4 alkyl.

21. **(Original)** The compound of claim 20, wherein:

$Q^1, Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are selected from H, C_1-C_6 alkyl, $-(CO)-R^5$ wherein R^5 is C_1-C_6 alkyl, and $-Si(R^6R^7R^8)$ wherein R^6, R^7 , and R^8 are all methyl or all ethyl; and
 R^1, R^2, R^3 , and R^4 are methyl.

22. **(Original)** The compound of claim 16, wherein:

Q^1 is $-(CO)-R^5$ and $Q^2, Q^3, Q^4, Q^5, Q^6, Q^7$, and Q^8 are H;
 Q^2 and Q^3 are $-(CO)-R^5$ and Q^1, Q^4, Q^5, Q^6, Q^7 , and Q^8 are H;
 Q^3 is $-(CO)-R^5$ and $Q^1, Q^2, Q^4, Q^5, Q^6, Q^7$, and Q^8 are H;
 Q^4 is $-(CO)-R^5$ and $Q^1, Q^2, Q^3, Q^5, Q^6, Q^7$, and Q^8 are H;
 Q^5 is $-(CO)-R^5$ and $Q^1, Q^2, Q^3, Q^4, Q^6, Q^7$, and Q^8 are H;
 Q^6 is $-(CO)-R^5$ and $Q^1, Q^2, Q^3, Q^4, Q^5, Q^7$, and Q^8 are H;
 Q^6 is C_1-C_6 alkyl and $Q^1, Q^2, Q^3, Q^4, Q^5, Q^7$, and Q^8 are H; or
 Q^8 is C_1-C_6 alkyl and $Q^1, Q^2, Q^3, Q^4, Q^5, Q^6$, and Q^7 are H.

23. **(Original)** The compound of claim 22, wherein:

Q¹ is benzoyl and Q², Q³, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q² and Q³ are acetyl and Q¹, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q³ is acetyl and Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁴ is acetyl and Q¹, Q², Q³, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁵ is acetyl and Q¹, Q², Q³, Q⁴, Q⁶, Q⁷, and Q⁸ are H;
Q⁶ is acetyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H;
Q⁶ is methyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H; or
Q⁸ is methyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁶, and Q⁷ are H.

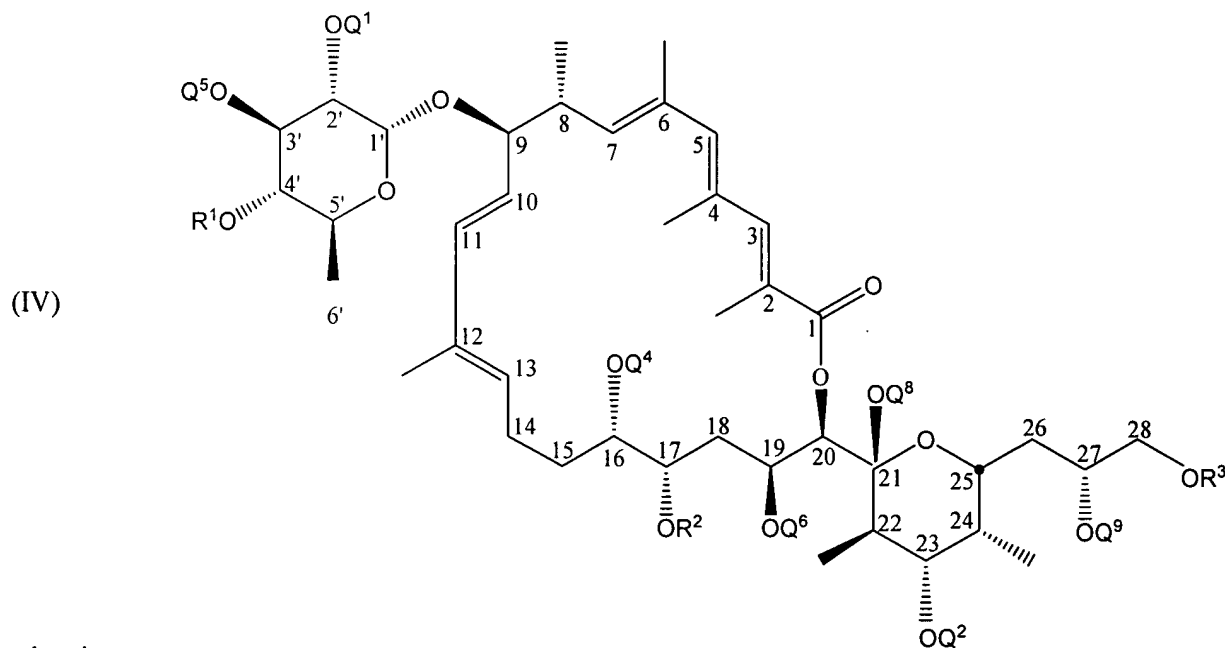
24. **(Original)** The compound of claim 17, wherein:

Q¹ is -(CO)-R⁵ and Q², Q³, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q² and Q³ are -(CO)-R⁵ and Q¹, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q³ is -(CO)-R⁵ and Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁴ is -(CO)-R⁵ and Q¹, Q², Q³, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁵ is -(CO)-R⁵ and Q¹, Q², Q³, Q⁴, Q⁶, Q⁷, and Q⁸ are H;
Q⁶ is -(CO)-R⁵ and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H;
Q⁶ is C₁-C₆ alkyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H; or
Q⁸ is C₁-C₆ alkyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁶, and Q⁷ are H.

25. **(Original)** The compound of claim 24, wherein:

Q¹ is benzoyl and Q², Q³, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q² and Q³ are acetyl and Q¹, Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q³ is acetyl and Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁴ is acetyl and Q¹, Q², Q³, Q⁵, Q⁶, Q⁷, and Q⁸ are H;
Q⁵ is acetyl and Q¹, Q², Q³, Q⁴, Q⁶, Q⁷, and Q⁸ are H;
Q⁶ is acetyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H;
Q⁶ is methyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁷, and Q⁸ are H; or
Q⁸ is methyl and Q¹, Q², Q³, Q⁴, Q⁵, Q⁶, and Q⁷ are H.

26. **(Original)** A compound having the structure of formula (IV)



wherein:

Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁸, and Q⁹ are independently selected from H, C₁-C₁₂ hydrocarbyl, acyl of the formula -(CO)-R⁵ in which R⁵ is C₁-C₁₂ hydrocarbyl, and hydroxyl-protecting groups; and R¹, R², and R³ are independently selected from C₁-C₁₂ alkyl and H, or a stereoisomer thereof.

27. **(Original)** The compound of claim 26, having the stereoisomeric configuration of formula (IV).

28. **(Original)** The compound of claim 26, wherein:

Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁸, and Q⁹ are independently selected from H, C₁-C₆ hydrocarbyl, -(CO)-R⁵ wherein R⁵ is C₁-C₆ hydrocarbyl, and -Si(R⁶R⁷R⁸) wherein R⁶, R⁷, and R⁸ are C₁-C₆ hydrocarbyl; and R¹, R², and R³ are C₁-C₄ alkyl.

29. **(Original)** The compound of claim 28, wherein:

Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁸, and Q⁹ are independently selected from H, C₁-C₆ alkyl, -(CO)-R⁵ wherein R⁵ is C₁-C₆ alkyl, and -Si(R⁶R⁷R⁸) wherein R⁶, R⁷, and R⁸ are all methyl or all ethyl; and R¹, R², and R³ are methyl.

30. **(Original)** The compound of claim 27, wherein:
Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁸, and Q⁹ are independently selected from H, C₁-C₆ hydrocarbyl, -(CO)-R⁵ wherein R⁵ is C₁-C₆ hydrocarbyl, and -Si(R⁶R⁷R⁸) wherein R⁶, R⁷, and R⁸ are C₁-C₆ hydrocarbyl; and R¹, R², and R³ are C₁-C₄ alkyl.
31. **(Original)** The compound of claim 30, wherein:
Q¹, Q², Q⁴, Q⁵, Q⁶, Q⁸, and Q⁹ are independently selected from H, C₁-C₆ alkyl, -(CO)-R⁵ wherein R⁵ is C₁-C₆ alkyl, and -Si(R⁶R⁷R⁸) wherein R⁶, R⁷, and R⁸ are all methyl or all ethyl; and R¹, R², and R³ are methyl.
32. **(Previously presented)** A compound prepared by reaction of the compound of claim 6 with a dienophile, wherein the C-10/C-13 diene functionality is converted to a cyclic group.
33. **(Previously presented)** A compound prepared by reaction of the compound of claim 16 with a dienophile, wherein the C-10/C-13 diene functionality is converted to a cyclic group.
34. **(Previously presented)** A compound prepared by reaction of the compound of claim 26 with a dienophile, wherein the C-10/C-13 diene functionality is converted to a cyclic group.
35. **(Original)** The compound of any one of claims 32, 33, and 34, wherein the dienophile is an N-halosuccinimide.
36. **(Previously presented)** A compound prepared by catalytic hydrogenation of the compound of claim 6, wherein at least one carbon-carbon double bond of the compound of claim 6 is converted to a single bond.
37. **(Previously presented)** A compound prepared by catalytic hydrogenation of the compound of claim 16, wherein at least one carbon-carbon double bond of the compound of claim 16 is converted to a single bond.

38. **(Previously presented)** A compound prepared by catalytic hydrogenation of the compound of claim 26, wherein at least one carbon-carbon double bond of the compound of claim 16 is converted to a single bond.

39. **(Previously presented)** A compound prepared by nucleophilic addition of the compound of claim 6, wherein at least one carbon-carbon double bond of the compound of claim 6 is converted to a single bond.

40. **(Previously presented)** A compound prepared by nucleophilic addition of the compound of claim 16, wherein at least one carbon-carbon double bond of the compound of claim 16 is converted to a single bond.

41. **(Previously presented)** A compound prepared by nucleophilic addition of the compound of claim 26, wherein at least one carbon-carbon double bond of the compound of claim 26 is converted to a single bond.

42. **(Previously presented)** The compound of claim 6, wherein at least one 1,2-diol functionality of the compound of claim 6 is converted to a cyclic ether.

43. **(Previously presented)** The compound of claim 16, wherein at least one 1,2-diol functionality of the compound of claim 16 is converted to a cyclic ether.

44. **(Previously presented)** The compound of claim 26, wherein at least one 1,2-diol functionality of the compound of claim 26 is converted to a cyclic ether.

45. **(Previously presented)** A pharmaceutical composition comprising a therapeutically effective amount of the compound of claims 2, 6, 16, 26 or 58 and a pharmaceutically acceptable carrier.

46. **(Original)** The composition of claim 45, wherein the therapeutically effective amount is a unit dosage and the composition is composed of a unit dosage form.

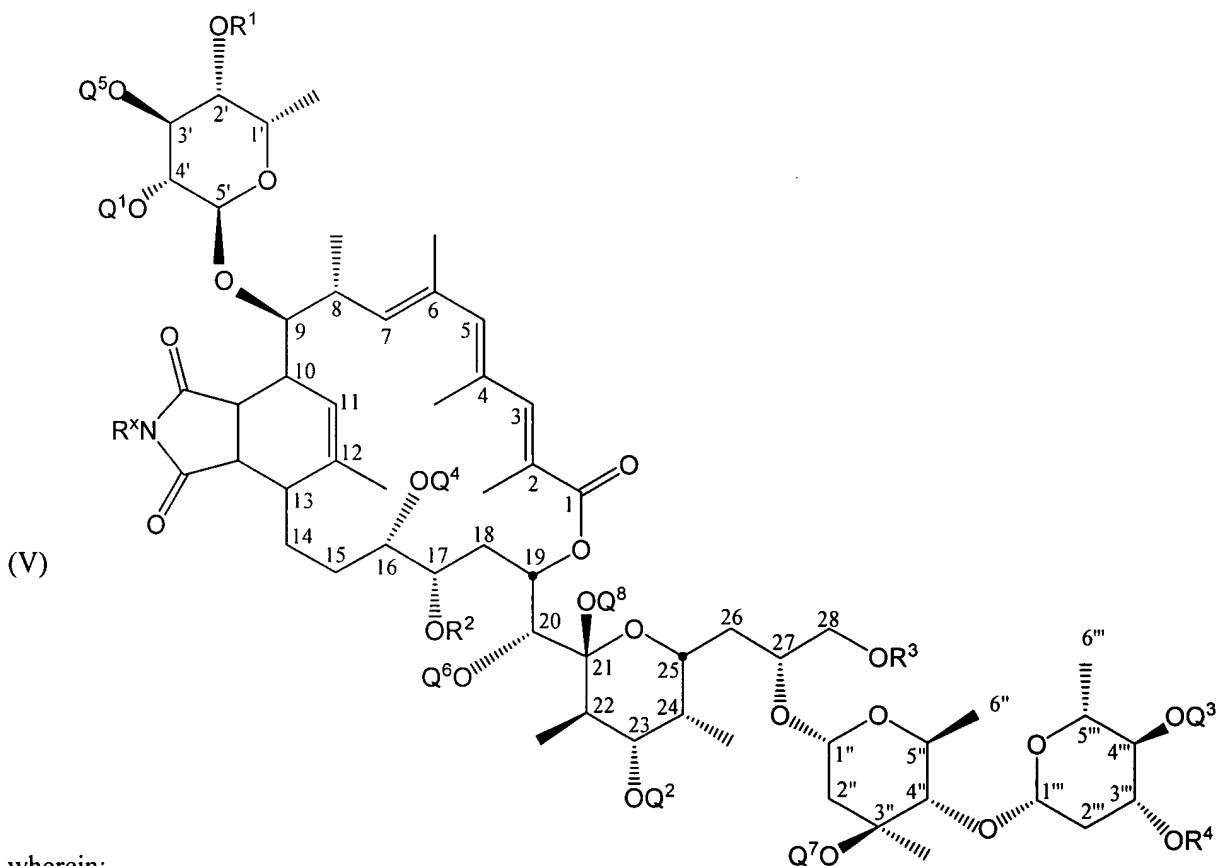
47. **(Original)** The composition of claim 45, comprising a sustained release formulation.

48. **(Previously presented)** A method for inducing apoptosis in cancer cells, wherein the compound of anyone of claims 2, 6, 16, 26, or 58 is administered to the cancer cells.

49. **(Canceled)**

50. **(Original)** A composition of matter comprising deglycosylated isoapoptolidin in isolated, purified form.

51. **(Original)** A compound having the structure of formula (V)



wherein:

Q^1 , Q^2 , Q^3 , Q^4 , Q^5 , Q^6 , Q^7 , and Q^8 are independently selected from H, C_1 - C_{12} hydrocarbyl, acyl of the formula $-(CO)-R^5$ in which R^5 is C_1 - C_{12} hydrocarbyl, and hydroxyl-protecting groups; and R^1 , R^2 , R^3 , and R^4 are C_1 - C_{12} alkyl or H, or a stereoisomer thereof.

52. **(Currently amended)** ~~Compounds prepared by oxidatively cleaving the~~ The compound of claim 51 oxidatively cleaved at the C-20/C-21 bond in the compound of claim 51.

53. **(Currently amended)** ~~Compounds prepared by oxidatively cleaving the~~ The compound of claim 51 oxidatively cleaved at the C-22/C-23 bond in the compound of claim 51.

54. **(Currently amended)** A functionalized apoptolidin compound comprising ~~a modified~~ an apoptolidin core in which:

(a) at least one hydroxyl group in the apoptolidin core is replaced with a substituent selected from C₁-C₂₄ hydrocarbyloxy, C₂-C₂₅ acyloxy, C₂-C₂₅ haloacyloxy C₂-C₂₅ thioacyloxy, C₂-C₂₅ thiohaloacyloxy, C₂-C₂₅ carbonato, halogenated C₂-C₂₅ carbonato, C₂-C₂₅ thiocarbonato, halogenated C₂-C₂₅ thiocarbonato, carbamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted carbamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted carbamoyloxy, thiocarbamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted thiocarbamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted thiocarbamoyloxy, sulfamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted sulfamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted sulfamoyloxy, and protected hydroxyl groups;

(b) at least one 1,3-diene functionality in the apoptolidin core is replaced by the product of a Diels-Alder reaction with a dienophile;

(c) at least one carbon-carbon double bond in the apoptolidin core is replaced with a carbon-carbon single bond; and/or

(d) at least one 1,2-diol functionality in the apoptolidin core is replaced with a cyclic ether.

55. **(Original)** The functionalized apoptolidin compound of claim 54, in which at least one hydroxyl group in the isoapoptolidin core is replaced with a substituent selected from C₁-C₂₄ hydrocarbyloxy, C₂-C₂₅ acyloxy, C₂-C₂₅ haloacyloxy C₂-C₂₅ thioacyloxy, C₂-C₂₅ thiohaloacyloxy, C₂-C₂₅ carbonato, halogenated C₂-C₂₅ carbonato, C₂-C₂₅ thiocarbonato, halogenated C₂-C₂₅ thiocarbonato, carbamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted carbamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted carbamoyloxy, thiocarbamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted thiocarbamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted thiocarbamoyloxy, sulfamoyloxy, N-(C₁-C₂₄ hydrocarbyl)-substituted sulfamoyloxy, N,N-di(C₁-C₂₄ hydrocarbyl)-substituted sulfamoyloxy, and protected hydroxyl groups.

56. **(Original)** The functionalized apoptolidin compound of claim 55, wherein the substituent is selected from C₁-C₁₂ hydrocarbyloxy, C₂-C₁₃ acyloxy, C₂-C₁₃ haloacyloxy, C₂-C₁₃ thioacyloxy, C₂-C₂₅ thiohaloacyloxy, C₂-C₁₃ carbonato, halogenated C₂-C₁₃ carbonato, C₂-C₁₃ thiocarbonato, halogenated C₂-C₁₃ thiocarbonato, carbamoyloxy, N-(C₁-C₁₂ hydrocarbyl)-substituted carbamoyloxy, N,N-di(C₁-C₁₂ hydrocarbyl)-substituted carbamoyloxy, thiocarbamoyloxy, N-(C₁-C₁₂ hydrocarbyl)-substituted thiocarbamoyloxy, N,N-di(C₁-C₁₂ hydrocarbyl)-substituted thiocarbamoyloxy, sulfamoyloxy, N-(C₁-C₁₂ hydrocarbyl)-substituted sulfamoyloxy, N,N-di(C₁-C₁₂ hydrocarbyl)-substituted sulfamoyloxy, (C₁-C₆ alkoxy)methyl ether, (C₁-C₆ alkylthio)methyl ether, and tri(C₁-C₁₂ hydrocarbyl)-substituted silyloxy.

57. **(Original)** The functionalized apoptolidin compound of claim 56, wherein the substituent is selected from C₁-C₁₂ hydrocarbyloxy, C₂-C₁₃ acyloxy, and tri(C₁-C₁₂ hydrocarbyl)-substituted silyloxy.

58. **(New)** A composition of matter comprising isoapoptolidin in isolated, purified form.